

A MICROCONTROLLER HAVING A DUAL MODE RELAX OSCILLATOR THAT IS  
TRIMMABLE

ABSTRACT OF THE DISCLOSURE

5           A microcontroller having a dual mode relax oscillator that is trimmable.  
In one embodiment, the present invention provides a relaxation oscillator circuit  
comprising two current sources for establishing a reference voltage for use in  
causing the relaxation oscillator circuit to operate in two power modes, and a  
control coupled to both current sources for switching between power modes.  
10   In one embodiment, the first current source supplies a larger current than the  
second current source. In one embodiment, one power mode is a low power  
mode for standard operation of the microcontroller and one power mode is a  
very low power mode for use in a sleep mode. In one embodiment, the  
relaxation oscillator circuit further comprises digitally trimmable components  
15   operable to control a current charging a capacitor of the relaxation oscillator  
circuit to account for process variation in the capacitor, wherein the current is for  
controlling a frequency of the microcontroller. In one embodiment, the present  
invention provides a method for generating a clock signal. A switched current  
source corresponding to a present power mode is selected by switching  
20   between the first current source and the second current source. A reference  
voltage is generated based on the switched current source. In response to the  
reference voltage, the relaxation oscillator circuit generates a clock signal.